

CLAIMS

1. An improved method of processing corn plants with a corn head row unit comprising the steps of:
 - a. engaging the corn plant with a plurality of stalk rolls,
 - b. pinching the corn plant between said stalk rolls,
 - c. pulling the corn plant stalk down with said stalk rolls,
 - d. separating said ear of corn from the corn plant stalk,
 - e. engaging said ear of corn with at least one gathering chain paddle,
 - f. having the speed of said stalk rolls and gathering chain paddles fixed during operation;
 - g. wherein the maximum velocity of said gathering chain paddle creates minimal stalk shear; and,
 - h. wherein the maximum ear separation substantially vertical velocity creates minimal damage to the ear of corn upon impact with the stripper plates.
2. An improved arrangement of a corn head row unit comprising:
 - a. a source of power for rotation, ✓
 - b. at least one stalk roll for engagement with a corn plant stalk,
 - c. said stalk roll having at least one flute,
 - d. a stripper plate,
 - e. at least one gathering chain having paddles,
 - f. a gearbox fixing the speed of said gathering chain paddles and said stalk roll flute during operation,
 - g. wherein the gearbox ratio is selected to create minimal stalk shear; and,
 - h. wherein the resulting maximum ear separation velocity creates minimal damage to the ear of corn upon impact with the stripper plates.
3. An improved arrangement of a corn head row unit according to claim 2 having two opposing stalk rolls for engagement with a corn plant stalk.

4. An improved arrangement of a corn head row unit according to claim 2 wherein said stalk rolls have an enlarged length to minimize stalk shear.

5. An improved arrangement of a corn head row unit according to claim 2 wherein said gathering chain drive sprocket size has been reduced to minimize stalk shear.

6. An improved arrangement of a corn head row unit according to claim 2 wherein said stalk roll diameter has been increased to minimize stalk shear.

7. An improved arrangement of a corn head row unit according to claim 3 wherein said stalk rolls have an enlarged length to minimize stalk shear.

8. An improved arrangement of a corn head row unit according to claim 3 wherein said gathering chain drive sprocket size has been reduced to minimize stalk shear.

9. An improved arrangement of a corn head row unit according to claim 3 wherein said stalk roll diameter has been increased to minimize stalk shear.

10. An improved arrangement of a corn head row unit according to claims 7, 8, or 9 wherein said row unit has a shear point with a rounded edge. 3

11. An improved method of processing corn plants with a corn head row unit comprising the steps of:

- a. engaging the corn plant with a plurality of rotational elements,
- b. pinching the corn plant between said rotational elements,
- c. pulling the corn plant stalk down with said rotational elements, 3
- d. separating said ear of corn from the corn plant stalk,
- e. engaging said ear of corn with at least one horizontal element,
- f. said horizontal element substantially moving only ears of corn for collection and further processing within the threshing unit of a combine,

g. wherein the velocity of said horizontal element minimizes the occurrence of corn plant stalk separation due to corn plant stalk movement restrictions created by said rotational and horizontal elements; and,

h. wherein the speed of said rotational and horizontal elements is fixed during operation.

12. An improved arrangement of a corn head row unit comprising:

a. a source of power for rotation,

b. at least one stalk roll for engagement with a corn plant stalk,

c. said stalk roll having at least one flute,

d. a stripper plate,

e. at least one gathering chain having paddles,

f. a gearbox fixing the speed of said gathering chain paddles and said stalk roll flute during operation,

g. wherein the gearbox ratio is selected to produce a gathering chain paddle velocity which minimizes the occurrence of corn plant stalk separation due to corn plant stalk movement restrictions created by said stalk rolls and gathering chain paddles; and,

h. wherein the resulting maximum ear separation velocity creates minimal damage to the ear of corn upon impact with the stripper plates.

13. An improved arrangement of a corn head row unit according to claim 12 having two opposing stalk rolls for engagement with a corn plant stalk.

14. An improved arrangement of a corn head row unit according to claim 12 wherein said stalk rolls have an enlarged length to minimize stalk shear.

15. An improved arrangement of a corn head row unit according to claim 12 wherein said gathering chain drive sprocket size has been reduced to minimize stalk shear.

16. An improved arrangement of a corn head row unit according to claim 12 wherein said stalk roll diameter has been increased to minimize stalk shear.

17. An improved arrangement of a corn head row unit according to claim 13 wherein said stalk rolls have an enlarged length to minimize stalk shear.

18. An improved arrangement of a corn head row unit according to claim 13 wherein said gathering chain drive sprocket size has been reduced to minimize stalk shear.

19. An improved arrangement of a corn head row unit according to claim 13 wherein said stalk roll diameter has been increased to minimize stalk shear.

20. An improved arrangement of a corn head row unit according to claims 17, 18 or 19 wherein said row unit has a shear point with a rounded edge. 3

21. An improved arrangement of a corn head row unit according to claim 20 wherein said shear point is removable allowing for replacement.

22. An improved arrangement of a corn head row unit comprising:

- a. means for engaging a corn plant with a plurality of rotational elements, /
- b. means for pinching a corn plant between said rotational elements,
- c. means for pulling the corn plant stalk down with said rotational elements,
- d. means for separating the corn plant ear from the corn plant stalk,
- e. wherein the maximum ear velocity allowed creates minimal damage to the ear of corn upon impact with said separation means,
- f. means for engaging an ear of corn for horizontal movement to an ear collection means and further processing within the threshing unit of a combine,
- g. wherein the maximum velocity of said means for engaging an ear of corn for horizontal movement creates minimal stalk shear; and,
- h. a power source for said engaging, pinching, pulling and horizontal movement means wherein the speed of said means is fixed during operation.